

CLAIMS:

1. A method to determine a discrimination threshold of a received signal input from an optical transmission line, comprising steps of:

5 measuring a bit error rate of the received signal at each of a plurality of discrimination thresholds by changing a polarization direction of an optical signal to enter the optical transmission line to detect the worst bit error rate at each discrimination threshold; and

10 searching a predetermined bit error rate from the plurality of the detected worst bit error rates and searching a discrimination threshold of the received signal according to the predetermined bit error rate.

15 2. The method of claim 1 wherein the predetermined bit error rate comprises the lowest bit error rate assumed from the plurality of the detected worst bit error rates.

3. A method to determine a discrimination threshold of a received signal input from an optical transmission line, comprising:

20 a first searching step to measure a bit error rate of the received signal at an initial discrimination threshold by changing a polarization direction of an optical signal which enters the optical transmission line and to search a polarization state of the optical signal which makes the bit error rate the worst; and

a second searching step to scan the discrimination threshold of the received signal keeping the polarization state of the optical signal after the first searching step to search a discrimination threshold of the received signal which becomes a predetermined bit error rate.

4. The method of claim 3 wherein the predetermined bit error rate comprises the lowest bit error rate.

5. An apparatus to determine a discrimination threshold of a received signal from an optical transmission line, comprising:

a polarization controller disposed between an optical transmitter for outputting an optical signal and the optical transmission line to rotate polarization of the optical signal output from the optical transmitter;

a photodetector to convert the optical signal propagated on the optical transmission line into an electric signal;

a discrimination circuit to discriminate the output from the photodetector according to a discrimination threshold;

an error rate measuring circuit to measure a bit error rate of the output from the discrimination circuit; and

a control circuit which controls the polarization rotating amount of the polarization controller and the discrimination threshold of the discrimination circuit to search the worst bit error rate at each discrimination threshold by changing the polarization

rotating amount of the polarization controller at each of a plurality of discrimination thresholds and to search a discrimination threshold having a predetermined bit error rate out of the worst bit error rates.

6. The apparatus of claim 5 wherein the control circuit sets
5 the discrimination circuit for a finally obtained discrimination threshold.

7. The apparatus of claim 5 wherein the predetermined bit error rate comprises the lowest bit error rate assumed from the plurality of the worst bit error rates.

8. An apparatus to determine a discrimination threshold of
10 a received signal input from an optical transmission line comprising:

a polarization controller disposed between an optical transmitter for outputting an optical signal and the optical transmission line to rotate polarization of the optical signal output
15 from the optical transmitter;

a photodetector to convert the optical signal propagated on the optical transmission line into an electric signal;

a discrimination circuit to discriminate the output from the photodetector according to a discrimination threshold;

20 an error rate measuring circuit to measure a bit error rate of the output from the discrimination circuit; and

a control circuit which controls the polarization rotating amount of the polarization controller and the discrimination

threshold of the discrimination circuit to search a polarization rotating amount having the worst bit error rate by changing the polarization rotating amount of the polarization controller at an initial discrimination threshold, and to scan the discrimination threshold of the discrimination circuit keeping the polarization rotating amount to search a discrimination threshold having a predetermined bit error rate.

9. The apparatus of claim 8 wherein the control circuit sets the discrimination circuit for the finally obtained discrimination threshold.

10. The apparatus of claim 8 wherein the predetermined bit error rate comprises the lowest bit error rate.

11. An optical transmission system comprising:

an optical transmission line;

an optical transmitter to output an optical signal;

a polarization controller disposed between the optical transmitter and the optical transmission line to rotate polarization of the optical signal output from the optical transmitter;

a photodetector to convert the optical signal propagated on the optical transmission line into an electric signal;

a discrimination circuit to discriminate the output from the photodetector according to a discrimination threshold;

an error rate measuring circuit to measure a bit error rate of

the output from the discrimination circuit; and

a control circuit which controls the polarization rotating amount of the polarization controller and the discrimination threshold of the discrimination circuit to search a discrimination threshold corresponding to a predetermined bit error rate out of the worst bit error rates relative to the variation of the polarization direction of the optical signal.

12. The optical transmission system of claim 11 wherein the predetermined bit error rate comprises the lowest bit error rate within the worst bit error rates relative to the variation of the polarization direction of the optical signal.

13. The optical transmission system of claim 11 wherein the control circuit searches the worst bit error rate at each discrimination threshold by changing the polarization rotating amount of the polarization controller at each of a plurality of discrimination thresholds and searches a discrimination threshold to make the bit error rate the lowest out of the plurality of the worst bit error rates.

14. The optical transmission system of claim 11 wherein the control circuit searches a polarization rotating amount having the worst bit error rate by changing the polarization rotating amount of the polarization controller at an initial discrimination threshold, and scans the discrimination thresholds of the discrimination circuit

keeping the polarization rotating amount to search a discrimination threshold making the bit error rate of the optical signal the worst.

15. The optical transmission system of claim 11 wherein the control circuit sets the discrimination circuit for the predetermined

5 discrimination threshold.

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